

## **THE IMPACT OF ENVIRONMENTAL FACTORS ON GROWING VEGETABLES IN MINIA GOVERNORATE, EGYPT**

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### **Abstract**

Environmental factors around us are numerous, human, animal and plant affected by, and affect the activity and production capacity, and the economics of life affected by it in different aspects. The effect of these factors is reflected clearly on the General agriculture, leaving a strong reaction to prices, and include many kinds of products including greens, where it is most influenced by environmental conditions, were selected Minia Governorate as an example application to illustrate the role of environmental factors on the economics of the production of vegetables. As for the reasons for choosing the subject, the preservation of agricultural Governorates in addition to a growing population, and the increase of the consumption of vegetable crops of all kinds, the motivation for this study.

Research followed inductive descriptive approach, which relies on different sources of data on the subject of research, and analytical approach to draw conclusions about the impact of environmental factors on growing vegetables in Minia.

**Keywords:** First Keyword; environmental factors, Second Keyword; Minia Governorate, Third Keyword; temperature, Fourth Keyword; rain, Fifth Keyword; climate

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## 1. Introduction

Minia Governorate, one of the agricultural Governorate in Egypt, within the Central governorates of Egypt between latitudes 40/27, 40/28 north, extending longitudinally, where confined between Longitude (30/30, 31) to the east, as a widening easy space out 15 km, and Minia Governorate space (the valley only) 2274 km<sup>2</sup>, and conducted by three water longitudinally streams: the Nile River (133.3 km), Yusuf Sea and Ibrahimiya canal, bordered to the east Eastern desert and west of Western Sahara, one of the best areas for agricultural expansion, divided conservative to 9 administrative centers are, from north to south: Al-E'dwa, Maghagha, Beni Mazar, Matai, Samalout, Minia, Abu-Qarqas, Mallawi and Deir Mowas. Minia Governorate is divided lengthwise into three sectors stretching from the deep south to the far north, are as follows:

- . Eastern sector: penned eastern desert from the east and the River Nile from the West, this sector is characterized by great difficulty for potential expansion and land reclamation due to the floodplain, the eastern side is characterized by strongly rise, where the plateau rises to more than (150 m) above mean sea level.
- 1.

B. East Sector is one of the most important land preservation in terms of quality and breadth, and bounded on the Nile River to the east and the west Joseph Sea, this sector is the most conservative areas of concentration of the population, where it accumulates - along the longitudinal - all cities of the Governorate.

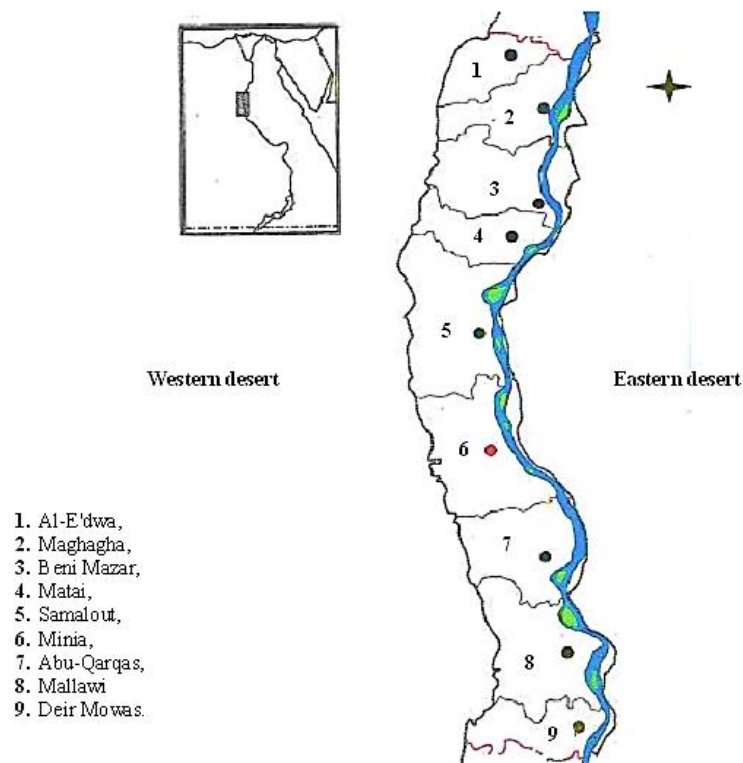
C. Western Sector: Sea bounded on the east and Joseph confluence of the borders of the Governorate with the western edge of the desert, and graded rise in some areas in this sector, and this region is considered the fittest areas of horizontal agricultural expansion[1].

## 2. Environmental factors in Minia Governorate

Environmental factor or ecological factor or cofactor is any factor, abiotic or biotic, that influences living organisms. Abiotic factors include ambient temperature, amount of sunlight, and pH of the water soil in which an organism lives. Biotic factors would include the availability of food organisms and the presence of conspecifics, competitors, predators, and parasites, [2].

## 1. 2. Temperature

Is one of the most important climatic elements, due to the impact on other elements, also affects all human activities directly or indirectly, and despite the fact that winter begins astronomer at December 21 of each year, the cold weather and low temperatures start at the end of the month of November, the last month of autumn, because the depressions offs with the Mediterranean Basin, beginning in late September, and are shallow, then increase in traffic and the depth at the beginning of November, and have their impact on the northern Egypt, a strong and weakens influence the deeper he went inside, nor to reach the study area which only the cold waves associated with it, [3].



### *Minia governorate*

A temperature is an objective comparative measure of hot or cold. It is measured by a thermometer, which may work through the bulk behavior of a thermometric material, detection of thermal radiation, or particle kinetic energy. There is a variety of kinds of temperature scale. It may be convenient to classify them as empirically and theoretically based,[4], [5], [6].

*Table 1. The monthly rates of heat and anomalous grades in Minia Governorate (2015), [7]*

Average temperature	January	February	March	April	May	June	July	August	September	October	November	December	Annual
Super power end	20.2	22.5	25.8	30.8	34.8	36.5	36.7	36.3	33.6	42.4	26.5	21.8	29.7
Junior end	3.9	5.3	8.0	12.1	16.4	19.0	20.2	20.4	18.5	15.5	11.5	6.6	13.1
Maximum degree	31.7	35.4	40.9	44.3	48.0	47.5	45.5	44.6	41.7	41.5	39.3	23.2	
Lowest score	- 4	- 4	- 1	3	8.5	13	16	16	12.6	9.2	2.9	8-	

January is one of the more winter months exposed to the invasion of cold air masses, take the form of a cold waves up to 8 waves, and continue each wave two days or more, and the average temperature winter to  $(11-8)^\circ\text{C}$ , and can be up to scratch so it's up to  $(-4)^\circ\text{C}$ , as part of the desert climate extreme heat, which is characteristic of the study area.

We find that June is the first month of summer, it may be affected by the passage of depressions sirocco wind brings with it severe heat and drought, winds, and also be dusty, but they are infrequent compared to the spring.

## 2. 2. Solar radiation

increasing sunshine hours is generally in Minia Governorate, especially in the summer, represented in June, July and August months (90, 92.92, respectively) as shown in the following table:

*Table 2. The percentage of the number of hours of sunshine,*

*According to the monthly average in the Minia Governorate (2015), [7]*

January	February	March	April	May	June	July	August	September	October	November	December
82	84	%	%	%	%	%	%	88	%	85	85

Therefore, explains the large temperature range in that period compared to the rest of the year, which helped a suitable climate for the growth of many agricultural crops, and the sky is free of clouds during that period of the year, or not to be affected by Albedo satisfying to pull the (ground albedo is the overall capacity of gaseous envelope + the ground, through the waters of the seas and oceans) on the reverse (Reflection), responded solar radiation arrivals of the star of the sun to the Earth, the space, to the gaseous envelope again.

### 3. 2. Atmospheric Pressure

Of the most important factors affecting the climate, characterized by Governorate global pressure systems, influenced in winter of by the Azores high pressure system, which causes a severe decrease in the temperature of the dry mass, therefore, the difference between the average atmospheric pressure winter, and the average public pressure is great (1013.2), while in the spring, disturbed air pressure from month to month, due to weather of spring depressions on the sidelines of the African desert, overlooking the Mediterranean sea passage.

*Table 3. Average atmospheric pressure in Minia Governorate (2015)*

January	February	March	April	May	June	July	August	September	October	November	December
1018.6	1017.5	1015.3	1012.7	1011.0	1009.6	1007.1	1007.1	1011.0	1014.0	1016.7	1018.5

With the beginning of summer, the weather conditions settle down, and the emergence of air depressions rarely episodic, and covers a great heat low, is low seasonal south Asia and south-east. Then comes the separation of moderation in Egypt General and Minia Governorate in private, very rarely spoken of by air disorder, it is characterized by the separation of autumn in Egypt - at the end - the emergence of storms thunder on the middle Egypt area (which Minia is part of it), and accompanied by a flash of lightning, and rain rains, causing floods sweeping dangerous, affecting the built-up areas at the mouths of the valleys in the east of the Nile River. And

sometimes it consists pulled low base up to the surface, so the thick fog, you may stay until just before noon sometimes.

Wind is a natural movement of air, usually horizontal parallel to the ground, and so-called (Wind surface), blowing from high pressure areas to low pressure areas, to replace the rising air venue to the highest when the latter areas.

*Table 4.monthly average wind speed in Minia Governorate (2015)*

January	February	March	April	May	June	July	August	Septembe	October	Novembe	December
5,0	5,9	7,9	8,0	8,7	9,2	7,8	6,6	7,4	6,1	6,0	4,9

From the above table, it is clear the following:In winter, what was the impact of weather depressions winter does not cut deep south to Governorate, we find northern and northwestern winds prevail Governorate, and in the spring, winds blow north and northeast, and that when the weather conditions are stable, either when going through depressions sirocco, the weather conditions disturbed, and affect the depressions on the wind directions, they are blowing from the south-east first, then turn to the south, then southwesterly, then west and northwest, [8]. The wind in summer are characterized by stability and stability, which is predominantly northwesterly and northeasterly, and have compared the separation of autumn as falling back to somewhat westerly wind effect, become a north wind is the prevailing wind, followed by the impact - but less of them much - northwest winds.

Humidity is defined as an amount of water vapor actually present in the air at a given temperature, and if the air cargo and reached to the maximum extent, it can be carried; it knows when it has reached its maximum degree of saturation.

*Table 5.The relative humidity in Minia Governorate*

January	February	March	April	May	June	July	August	Septemb	October	Novemb	Decemb
58 %	%53	%48	%40	%35	%39	%45	%51	%54	%54	%60	%62

It is seen from the above table: In the winter season (November-December-January), the proportion rises relative humidity in the air, due to the region in that period, low temperature, leading to the air is closer to the point of saturation, and in the spring , it is less seasons in the degree of relative humidity, because of blowing warm dry sirocco that blows from the desert, and while blowing it, the relative humidity drops suddenly, in May, declining to about 35%.

Evaporation: the area draws moisture by evaporation from several water sources, represented in the Nile River in the east and a network of canals and drains and Joseph Sea in the west, too, of the transpiration process carried out by plants and evaporation from the soil.

*Table 6.Monthly Average of evaporation in Minia Governorate*

January	February	March	April	May	June	July	August	Septembe	October	Novembe	Decembe
4.6	5.9	8.0	10.	14.	15.	14.	11.	10.	8.7	601	4.6

From the above table that Minia Governorate, clear differences in the averages of evaporation between the seasons of the year, particularly between winter and summer, due to the temperature in the summer play an important role in increasing the rate of evaporation. In general, the amount of evaporation depends on the number of factors: temperature, relative humidity, air movement and speed of the wind, where you play the temperature in the summer - for example - an important role in increasing the high rate of evaporation.

Rain is liquid water in the form of droplets that have condensed from atmospheric water vapor and then precipitated that is, become heavy enough to fall under gravity. Rain is a major component of the water cycle and is responsible for depositing most of the fresh water on the Earth. It provides suitable conditions for many types of ecosystems, as well as water for

hydroelectric power plants and crop irrigation. The major cause of rain production is moisture moving along three-dimensional zones of temperature and moisture contrasts known as weather fronts. Global warming is also causing changes in the precipitation pattern globally,

Climate classification systems such as the Köppen climate classification system use average annual rainfall to help differentiate between differing climate regimes. Rainfall is measured using rain gauges. Rainfall amounts can be estimated by weather radar,[9]. Rain is considered the most important aspects of water vapor condensation in the air, due this importance to the close connection between him and the different types of life on Earth, as the rain after the formation of the earth's crust, and the formation of multiple types of physiographic phenomena, that we see everywhere on Earth.

*Table 7. The Average Monthly of rain in Minia Governorate*

January	Februar	March	April	May	June	July	August	Septem	October	Novemb	Decemb
5.0	1.5	3.0	3.0	4.0	Effec	0	Effec	Effec	4.0	1.0	5.0

Clear from the above table: The rain in Minia Governorate, a few, and that the largest amount could drop to be in the winter, while the amount of precipitation in the spring drop compared to winter, ending up in (3.0 mm), and non-existent rainfall in the summer, especially July.

Is evident from the previous view that Minia Governorate has a special atmosphere, where it is considered a southern end of the semi-desert climate, though it is dominated by desert climate and all these elements of past climate influenced by a number of geographical factors that make these elements.

Climate is the statistics of weather, usually over a 30-year interval; It is measured by assessing the patterns of variation in temperature, humidity, atmospheric pressure, wind, precipitation, atmospheric particle count and other meteorological variables in a given region over long periods of time. Climate differs from weather, in that weather only describes the short-term conditions of



these variables in a given region. A region's climate is generated by the climate system, which has five components: atmosphere, hydrosphere, cryosphere, lithosphere, and biosphere.

The climate of a location is affected by its latitude, terrain, and altitude, as well as nearby water bodies and their currents. Climates can be classified according to the average and the typical ranges of different variables, most commonly temperature and precipitation,[10].

### **3.The geographic factors affecting of the climate**

There are some important geographical factors that affect the climate in general, and in the climate of Minia Governorate in particular, these factors combined have helped to influence directly or indirectly on the previous climatic elements and these factors are the following:

#### **1. 3. Astronomical and geographical location**

The effect of latitude spatially in light shows and the temperature and relative humidity of the area and the amount of evaporation, as it is the end semi-desert climate, enjoying extremism climate so as to distance from the Mediterranean effect, as well as to its distance from the south tropical conditions, which gave her the nature of climate privileged.

Minia Governorate As mentioned previously within the Central governorates of Egypt, located south of Assiut and north of BeniSuef, given the former location, Minia be subject to cold waves that air depressions winter traffic tracker, and affect Egypt Central, will these waves come to this area, but if the Winter weather depressions in depth and in control of the island of Cyprus,[3].

#### **2. 3. Manifestations of the Earth's surface**

Featuring appearances surface in the study area a special character, represented in the nature of the terrain and along of two plateau east, west and longitudinally, and detente helped to push North wind North West, and the prevailing cold north wind which accompaniment for the passage of air depressions winter, and black slip very cold air toward the valleys, accumulate snow slides on the leaves and stems of plants in the winter, the phenomenon of frost composed devastating for most crops, especially vegetables and fruit tree crops.

Frost is the coating or deposit of ice that may form in humid air in cold conditions, usually overnight. In temperate climates it most commonly appears as fragile white crystals or frozen dew drops near the ground, but in cold climates it occurs in a greater variety of forms, frost is composed of delicate branched patterns of ice crystals formed as the result of fractal process development.

Frost is known to damage crops or reduce future crop yields, therefore farmers in those regions where frost is a problem often invests substantial means to prevent its formation,[11].

### **3. 3. Proximity or distance from water bodies**

Comparison between the temperatures of Minia Governorate and Nautical Oasis and the region, where it is on the same latitude shows the following: approaching the average temperature between the two regions in January (Minia Governorate: 11.8 Nautical oases: 12.3), and July (Minia Governorate: 28.5, Nautical oases: 29.5), since the month of January is the height of winter, and the month of July is the height of summer, is evident from the comparison, the extent of the difference small between the two regions, which confirms the limited role of the water bodies in the tempering temperature, these bodies represented in the Nile, canals and drains the river, as confirms the desert climate control over Minia Governorate.

### **4. 3. Air masses**

A huge offense from a homogeneous air covers a large area of dry surface or body of water,featuring air these blocks in homogeneous climatic characteristics, in levels or horizontal bloc sectors, especially in the temperature and decreasing the rate of rise, humidity, and the amount and type of clouds, and Visibility,[12].The affected of MiniaGovernorateclimate aerobic blocs, which is affected by the climate of Egypt in general, which is divided into: polar air masses (continental), polar air masses (freely), tropical air masses (continental) Air blocks orbital (freely).

#### **4. The impact of climate in the production of vegetables**

Climate, is one of the factors affecting the production of vegetable crops, and despite the fact that agricultural crops are affected by soil and terrain, insects and diseases, however, the climate is one of the more other environmental factors in its impact on growth and development of the plant.

The main climate which plays an important role in the agriculture elements: heat, humidity in its various forms, the sun, wind and evaporation, plant requires growing appropriate limits of these elements in the local environment, which grows where, otherwise, cultivation of this crop to be uneconomical.

Rights and can change the atmosphere of some small places to become suitable for the growth of a particular crop, but that is often expensive, and each crop threshold limit values climatic elements, growing by implication, and out of those thresholds, you can not cultivate this crop or another, knowing that eclecticism operations It made it possible to find some plant species which have a wider field of the original type and, therefore, could be grown in success outside their native habitat, [13].

##### **1. 4. Heat and its relationship to the production of vegetables**

Temperature controls, directly or indirectly, operations and functions which are made in the plant in general and, in particular, the Greens, and the Greens require at different stages of her life varying degrees of heat.

For example, the germination temperature is lower than the growth temperature is less than the degree necessary to bloom heat, which also is less than the degree necessary to fruition and maturity heat, and each leaf temperature minimum is difficult for him to live without them, and the degree of super heat (ceiling) is difficult for him to live then, with a degree of optimal temperature is achieved then his best growth situations.

It is known that extreme low temperature, which leads to freeze the water in the stem works to rupture its cells, as the heat that rises from the ceiling leads to wilting of leaves and Fallen, [14].

**A. Minimum temperature:** the effect of low temperatures on the plant varies according to its type and attributes. If the temperature dropped to freezing almost the degree of absorption of

plant roots for moisture less, and the plant can no longer take water compensation has lost the process of transpiration, making it wilts, the potatoes of the most important type's vegetables that managed to resist the decline warming.

*Table 8. The minimum temperature required for the growth of some types of vegetables, [13].*

Crop	Minimum temperature
Spinach	4 ° C
garlic	7-8 ° C
cabbage	4-6 ° C
beans	10 ° C
tomatoes	14-16 ° C
okra	18 ° C
cucumber	15-16 ° C

*Table 9. Average finish of micro heat in Minia Governorate, [13]*

Minimum temperature	Month
3.6	January
5.3	February
8.0	March
12.1	April
16.4	May
19.0	June
20.2	July
20.4	August
18.5	Septemb
15.5	October
11.5	Novemb
6.6	Decemb

It is clear from the previous tables, clear difference between the grades of micro heat in Minia, and degrees minimum for crop growth, but nonetheless grown in the province of Minia annually in the off-season, some of which is grown traditionally or grown inside greenhouses, too, we find the vast difference between the temperature minimum yield of tomatoes, especially the winter, and the average temperatures for months three winter, it is clear that, degrees minimum temperature drops to a certain extent far below the minimum tomatoes, leading to the exposure of the crop during that period to the waves frost hurt the crop, and suffering a terrible loss, not offset only crop of summer tomatoes.

**B. Great Temperature:** There is great sensitivity to some plants, for high temperatures in the early stages of its growth, high temperatures can lead - in some cases - to what is known as: blight (heatstroke), which causes the critical stage when the plus for plants exposed directly to radiation the sun.

High temperature affects food absorption from the soil, so the absorption elements finality by the root hairs happen more quickly, when increasing the temperature within certain limits, in general, high temperature leads to the speed of the growth process, it is rare that, high temperature air cause direct harm to the plant, however, increased transpiration of the plant process is causing this damage, [15].

*Table 10. Temperatures for some crops, [7]*

Crop	Cabbage	spinach	Garlic	Okra	Cucumber	bean	Tomatoes
High temperatures	24	24	30	35	32	26	26

*Table 11. Average maximum temperatures in Minia governorate, [7].*

Month	January	February	March	April	May	June	July	August	Septemb	October	Novemb	Decemb
average minimum	20.2	22.5	25.8	20.8	34.8	36.5	36.7	36.3	33.6	41.4	26.5	21.8

F

rom tables (10-11), illustrated as follows: Failure to maintain the great grades with maximum end to some of the greens agree, especially summer vegetables such as tomatoes (Summerlog), beans and okra. Where we find that the maximum end of her heat in a row is (26, 26.35), and we find that the summer months, ranging from (36.5, 36.3), that is more than the degree to which the plant be borne, which is so exposed plant severely damaged, and exposure to diseases serious like a sunburn, and also, cause the falling leaves of the plant.

**C. Ideal temperature:** Is the temperature at which they are plant functions, the ideal temperature for the shoot are different from those with the total root, [13], and that the activity of the chemical reactions in the plant increases the higher the temperature minimum, followed by the speed of growth, and if the temperature rises above that took the pace of growth to decline again, [13].

*Table 11. Ideal temperatures for some crops, [16]*

Crop	Cabbage	spinach	Garlic	Okra	Cucumber	bean	Tomatoes
High temperatures	18	28	24	30	24	21	12.1-24

Ideal temperature is just over occupies several degrees, this is the tomato, where the ideal temperature range from (12.1- 24° C), meaning that the crop if there is a temperature environment ranging from (12.1- 24° C), this will be the appropriate class for growth and access to produce a good crop.

When comparing the degree of favorite for the growth of crops, the heat and the average annual thermal degree in Minia Governorate, it is clear that among the (17° C) crop, the ideal temperature for growth was not consistent with the average temperature in the province of Minia only in tomato and bean yields, as each of them requires (21° C), which is very narrowly. The average temperature in the province of Minia decreases the degree ideal for the growth of the garlic crop, cucumbers temperature by (2.8 m° C).

**D. Frost:** There is a certain limit to withstand thermal reduction per plant at any stage of growth, known as the threshold for frost, which begins with him serious damage, and begin frost threshold is always below zero, and most types of vegetables affected between the two degrees (-1-6° C) such as potatoes , where they are able to resist frost to the stage of flowering buds at (-2° C) and in during the flowering stage when (-2° C), whereas fruiting stage, the resistance to frost shall be at (-1° C).

*Table 12. The smaller end of the temperature in the province of Minia, [7].*

January	February	March	April	May	June	July	August	September	October	November	December
- 4	- 4	- 0.7	3	8.5	13	16	16	12.6	9.2	2.9	- 0.8

Table (12) shows the extent of the decrease in temperature experienced by Minia region, cold waves and frost caused serious damage to vegetables, especially tomato crop, which suffered through many years of decline in production due to very low temperatures, and the occurrence of frost consecutive periods, especially during the seasons very cold winter, and potatoes not tolerate frost.

#### **E. Separating growth:**Steps necessary for the plant accumulated temperature:

All plants need a certain number of calories (temperatures accumulated), from the date of planting until maturity, starting from the minimum thermal growth, which is known as a zero growth, which is not one for each plant, and of course, this date can set maturity, often what used the accumulated heat as a way to predict the date of maturity of some crops, [13].

*Table 13. Total temperatures needed to harvest the accumulated heat, [13].*

Yield	zero growth (°C)	accumulated heat (°C)
Option	13	1400 - 1800
Potato	14	1505- 1800

Table 13 shows that the accumulated temperatures required for each of cucumber and big potatoes during the growing season, and this summer crops, and in the summer, the province of Minia has brightly the sun for long hours, giving an opportunity for those crops to complete their growth.

#### **2. 4. Light of the sun and its relationship to the production of vegetables:**

Needed agricultural crops vary from light - in terms of the intensity and the period - depending on the plant, but the type of light a certain effect on crops, plants use the visible spectrum rays packages, and plays along the waves, and the intensity of light and the length of the optical period of great importance in the growth of plants, and if the light is not very necessary for germination because the seeds germinate in the soil away from the light, but, as soon as the appearance of the plant above the surface (soil) shows the effect of light, and therefore need the plant to carry out photosynthesis, [17].

The optimal rate of growth of the plant is achieved when the light intensity between (8-20) a kilo lux, and the following figures show the optical values at which they achieved optimal conditions for flowering and fruiting, (Cucumber 2400 Lux - radish 400 lux), [16]. Often due to be flowering and abundant quantities during the growing season to strong light available, while the plant represents the composition of legs on the leaves and flowers account in the event that the amount of light is not sufficient.

*Table 14. photovoltaic period required for each crop day, [16]*

Crop	Potatoes	onion	spinach	potato
Number of daily light hours	10-12	12-14	12-16	12-18

The photoperiod, it affects the formation of flowers and fruits, also affect the vegetative growth, and the formation of bulbs and tubers, and on the development of roots. Plants according to the length of the day are divided into three sections:

1. Short day plants, (about 10 hours of sunlight), as in the option.
2. Long day plants, these blooms when it's long day (14 hours) sunlight almost like onions, spinach and beets.
3. Neutral plants, which are less sensitive to the period of daylight and can produce under any period lighting, and in all seasons of the year, as in potatoes, kale and lettuce, [13].

### **3. 4. Moisture and their relationship to the production of vegetables:**

Water in its various forms plays a key role in the growth and production of all crops, the plants need water from the rain water or other forms of precipitation or irrigation from wells, rivers, and there is no indication that the economic crops derive full moisture from the water air and steam, as plants non-economic, [13].

- A. The importance of soil moisture: along with the importance of the abundance of rain or irrigation water, too, must the water availability in the soil, so that the plant can benefit from it, and the plant takes advantage of all the water the soil, as the only part of it will be



capable of absorption by the roots. Whenever the amount of soil water decreased, less useful quantity of the plant, it reaches a point where it stops growing and fading, the amount of water in the soil in this case is called a factor wilt, and then become an urgent need to supply the soil with water.

B. The importance of air humidity: The biggest impact of atmospheric humidity resulting from the impact on transpiration of plants, which reflected its impact on all plant traits. In addition, the availability of air humidity can reduce the water requirements of the plant, Lack of moisture leads to the possibility of wilting plant in the event of a disruption in the balance water inside, so when you increase the amount of water lost to the process of transpiration from those absorbed by the plant from the soil, also leads the lack of moisture to the fall of the flowers and some of the recent decade fruit, while we find help to form a solid fruits of a core of thick sweet, and good flavor as in watermelon.

#### **4. 4. Wind and its relationship to the production of vegetables:**

Wind effect varies by type and severity and time of blowing, winds affect agricultural production directly or indirectly, he hurt severe plant wind, and help to increase the evaporation rate and the loss of vegetation water through transpiration, and then, the water needed by each plant the amount of stop the transpiration of it rates, as the plant takes the water makes up the lost ones by transpiration, but they help to transfer pollen between plants, and transmission of insects, [18], wind and help as well as the loss of part of a special crop exact proportions as in wheat and sesame, and in the province of Minia We find that the wind blowing from the north more than any other direction, where was (41.8%).

#### **5. 4. The production of vegetables in Minia governorate**

Vegetables multiple groups, so it is a special compound inside the compound crop agricultural crop, with a total area of (82,325) acres, and includes this compound (24) yields starting from tomatoes and watermelon, pepper turkey down to the smallest spaces.

*Table (15) the relative distribution of the area of vegetables in Minia Governorate (by acre), [7]*

Administrative	Platoon	Tomato	Potato	Mallo	Carrot	cabba	Other
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e centers	cucumber s	es	s	w	s	ge	
Al-E'dwa	19	14	2.3	-	-	-	6.7
Maghagha	2.5	9.4	-	-	-	-	12.9
BeniMazar	29.9	16	8.5	-	1.1	45.6	5.6
Matai	3	11	31.6	-	-	4	8
Samalout	10.1	12.6	38.4	-	1.3	2.7	4.9
Minia	7.2	13.1	12	21.7	82.4	1.8	18.4
Abu-Qarqas	8	4	7.2	-	11.2	12.2	21.6
Mallawi	9.7	11.3	-	78.3	31.7	4	17.3
DeirMowas	1.6	8.6	-	-	-	2	4.6
Wholesale	39785	25000	14250	1465	412	540	873

From the above table, it is clear that:

A. In Samalout, farmland widened due to an area of reclaimed land in the West, has led to an increase of some crop area, such as tomatoes, increase the garlic space centers BeniMazar and Matai and Maghagha, as well as onions, especially winter it handhold, and is concentrated by the enemy, increasing onions space on the level of the province of Minia due he profitable crops.

B. Greens South region of the province at least, due to the increased cash crops such as sugar cane and cotton.

C. Widening the Greens centers Samalout, Mallawiand Minia, and that population concentrated in urban areas, and the high cost of living in some urban areas, and the consequent frequent consumption of vegetables.

D. Side of the above, the productivity per acre play an important role in increasing the product from the Greens, despite the stability of vegetable area, because of the new seeds for vegetables, and these seeds bear the high temperatures in summer and high air humidity.

e. Fluctuating greens between winter and summer space because Platoon cucumbers space, especially watermelon, especially after the migration of skilled labor in its cultivation.

## **6.The impact of climate on vegetable diseases**

Vegetables diseases - in particular, plants in general diseases - are important to humans, where the damage to plants and their products, and environmental factors and disease greens, vegetables need to temperatures minimum temperature in order to grow and continue to operate, usually low temperatures prevailing be during the winter and early spring and late fall the least you need most pathogens, and therefore, the disease usually do not start or may stop during these periods, but quickly recovering if improved thermal conditions, different pathogens depending on high or low heat, and there are species to spread to areas or periods of heat is relatively less, while many of them prefer warmer temperatures, and diseases caused by temperature differences as follows:

### **1. 6. Bacterial soft rot or black leg**

The symptoms of mold soft on the tubers in a dark-colored spots appear, with a musty internal baste continue during storage, tubers infected - usually - do not have a strong odor, but her other organisms lead to the emergence of a strong smell repulsive, and back injury in higher degrees heat, up the injury to the tubers through the floor legs, and do not necessarily get all the plant stems, and live disease-causing bacteria in the soil and tubers infected, [19]. To combat the disease should be subject to the following:

- A. Follow the three-crop rotation or quad.
- B. Early in the cultivation of summer loop as much as possible.
- T. Tubers treated with antibiotics.
- W. Disposal of infected tubers, [19].

### **2. 6. Sunburn: (Acaros - tomato disease)**

Under normal circumstances, the effect of light on the evolution of the disease is very little, because some diseases strongly light affected, it has been found to reduce the intensity of the lighting before the infection - usually - increases the susceptibility of plant parasites such as fusarium in tomatoes and musty botratis in lettuce and tomatoes, but this susceptibility injury decreases for other parasites such as rust.

One of the most diseases expression of the effect of light in the vegetable disease is a disease of sunburn, Acaros crawls slowly on the surface of leaves, stems and fruit of tomatoes, is absorbed during this cell content, infection usually begins near the soil surface, then progressing to the top of the fruit - in general - get sunburn when exposed to the sun, a green plants to strong sunlight directly. Prevention of infection sunburn:

1. Cultivating strong shoots, which covers the fruits are good varieties.
2. Planting varieties that provide partial shading of the fruits, thus exposing to the sun gradually, and be less sensitive to injury.
3. Combating diseases and insects are good, so do not lose vegetative shoots that protects the fruit from the sun, [19].

### **3. 6. Early rarity**

Wind is an important environmental factors, which help transfer germs from infected plants to date by the serious damage healthy plants, wind effect be harmful clearly, especially wind blowing during the spring (sirocco), and the most important diseases in which the effect of air or wind is evident in the transfer of germs is the scarcity of early disease, infection is characterized by the emergence of large gray spots on the leaves to the color structure.

To combat the disease should consider the following:

1. The use of sound seeds in agriculture.
2. Follow the three-agricultural cycle.
3. Harvested tubers after completing their maturity, because the immature tubers are more susceptible to infection.
4. follow the program for spraying preventive fungicides is similar to the program used in the case of the late scarcity, [19], where the influence of moisture - also - to start offering the injury and that multiple and interrelated ways, seems to be the most important of these effects are concentrated on the germination of fungal spores, the disease on the leaves begin to form irregularly shaped spots water appearance, and appears on the edges of the bottom surface of the paper in the wet air, this fluffy growth of the fungus does not consist on the lower surface of the leaves, but at higher relative humidity (91%), then, dry leaves and gaining brown in color, and then spreading including injury to the necks of the leaves and stems. Control methods:

1. Non-tomato planting potatoes after the session, well, not planting tomatoes near potato fields.
2. Sprinkle nurseries periodically fungicides occasion.
3. The lack of irrigation sprinkler in a manner appropriate to the spread of disease and environmental conditions.
4. Removal of infected lower leaves in protected cultivation aphid.
5. Sprinkle tomato plants - in the sixth true leaf growth stage to the seventh amino acid is protein - led to the protection of the fungus infection.
6. Planting resistant varieties.

Evident from the previous offer, the need for a multiplicity of ways and means to cope with such diseases, and work to combat and attack it in all phases of plant growth, so as to obtain a good harvest and abundant free from disease, [20].

## **7.Methods to combat diseases of vegetables**

the availability of adequate information about the symptoms and causes for the development of plant diseases, are very useful in terms make it possible to devise or find effective ways to combat these diseases, and increase the quantity and quality of the crop output, and control methods vary from disease to another.

### **1. 7. Legislative or regulatory ways, [21]**

Summarized in preventing the introduction and spread of pathogens in the country or region in which the international quarantine and inspection, so that it can maintain a clean local environment of the causes of unsatisfactory extraneous purpose plant Wealth Protection, quarantine legislation prohibits or determine entry and passage of etiology is unknown presence, as well as plants and their products.

International quarantine is divided into two groups:

1. Full quarantine: whereby can prevent the entry of certain plants or part of its parts.
2. Organizational quarantine: authorizes the entry of certain plants or one of its parts within the region interdicted them, and authorized the entry of plants or parts thereof after treatment with chemically and thermally.

3. Quarantine Homeland: impose in the event of the emergence of a new disease in a specific area of the state, and it prevents the transfer of infected plants or their parts from this area to other areas.

4. agricultural roads: The purpose of those means to achieve control, through the activities of a human, by dealing with plants from the farm and the genetic point of view, and include the agricultural roads as follows:

## **2. 7. Agricultural transactions**

A. Remove and extermination of weeds that run on twice the growth of plants, which may be a haven for many plant pathogens.

B. planting dates: must follow the most suitable dates for agriculture, so that it can reduce the incidence of various plant diseases as much as possible, such as early in the cultivation of potatoes.

C. Distances of crop: dimensions occasion between plants in the field, prevents increased moisture accumulation on and between shoot parts.

D. adequate fertilization: working to increase the growth of plants, and its ability to high resistance level in plants for a number of pathogenic fungi, depending on the kind and quantity.

E. The moderation in irrigation: and organized according to the needs of the crop, because the increase irrigation for necessary works to weaken the root system of plants, thus exposing the crop to disease, for example echoes diseases convenience of high humidity.

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F. Follow the appropriate agricultural cycle: take into account in the design of the agricultural cycle, the crops are successive non-injury to the same diseases, and thus can reduce the spread of plant pathogens.

## **3. 7. Biological methods, [22]**

Biological methods used are limited to resist plant diseases, the use of resistant varieties for some pathogens, as well as by the use of micro-contrast or parasitize pathogens objects.

A. Plant resistant varieties:

This method represents the best ways to combat diseases such as wilt disease, as well as viruses and diseases as well as also the reverb, and there is no better way of resistant varieties, which provides the only way to produce a crop acceptable

B. the types of resistance: represents the heat in all its forms, the most natural way commonly used in plant disease resistance, may be used high or low temperatures, as well as various types of thermal radiation.

1. Sterilize the soil heat: The soil disinfection in greenhouses, and sometimes in the cradle of seeds through portable heat in the steam or hot water, soil sterilization is complete when the heat up in the most prominent point out to (82 ° C) for half an hour, and at this temperature kills all pathogens.

2. The exclusion of certain types of the virus from plants heat: This method has been successfully used in many viral diseases, with active hot air plants exposed to varying range of (35 ° C) to (40 ° C).

3. Member stored treatment of hot air: Members exposing this hot air, leading to the removal of the increase of moisture from the surfaces of these plant organs, such as exposing the roots of the potato temperature (28-32 ° C) for two weeks.

#### **4.7. Chemical methods:**

Chemical resistance to plant diseases in the field and greenhouses, and sometimes in storage is the most prevalent ways, is achieved by using toxic chemicals to the causes of disease.

Ways to use chemicals for disease control, [23]:

1. Spraying or fogging of shoot.

2. Seed treatment: usually treated seeds, tubers, and bulbs, roots with pesticides to prevent rot after planting as a result of attacking the portable pathological organisms that live on or in the soil.

3. Soil Treatment: Usually treated stomach soil for growing vegetables with some volatile compounds, resistance to nematodes, fungi, and bacteria.

The types of chemicals used in the fight against diseases of vegetables:

Copper compounds: Is a blend or mixture of Bordeaux of the most actively traded copper fungicides commonly used and accepted as given effects against many fungi and bacteria that infected spots of papers, dew and anthracnose and downy mildew.

Sulfur compounds:

1. Inorganic sulfur compounds: elemental sulfur is used in multiple images as dusters, wet table sulfur, a paste or lotion to combat powdery mildew for many plants.

2. Organic sulfur compounds:

These compounds include Thiocarbamates such as Thiram and Manib, and these vehicles are used for the treatment of seeds, bulbs and green spaces to fight shoots diseases.

### **5. 7. derivatives of benzene:**

Many derivatives of benzene toxicity demonstrated against floury objects has been reached, many of which fungal pesticide use, commercial, the most important of these compounds opinion Nitrochlorobenzene, Dicloran(Putran), Karthayeen and daconeel, [23].

### **6. 7. Physiological resistance:**

Also it called chemical resistance, due to the bio-active plant, leading to the death of the parasite or stop or prevent its extension required by the food, and the physiological characteristics special features

a. The presence of inhibitory substances for growth: It is a chemical in the host's cells, working to prevent the death of the parasites or provided such as antibiotics, oils and phenolic compounds, eg, some tomato varieties resistant to wilt disease.

B. Nutritional content of the juice: working to increase the viability of the plant to infection, or increase resistance to diseases, such as salts in the cabbage, reduce the incidence of yellowing.

### **7. 7. Morphological resistance:**

Is the effect of the plant form and mounted on incidence, for example, the thickness of the skin cells, has a significant impact on the appearance of certain illnesses such as reverb diseases.

1. Vertical resistance: Also called specialized resistance, where the plant variety is highly resistant to some strains of the pathogen, and susceptible to some of the other depending on genotype.

2. Horizontal resistance:

Also called field resistance or partial resistance or resistance is specialized, and where the plant variety resistant to varying degrees for all objects pathogen strains.



Evident from the previous offer, the diversity of ways and means to resist plant diseases in general and vegetables in particular, from the international procedures, special procedures for farmers, and Control Policy plant diseases, to get the crop distinct disease-free, and scientific research is still going on in the search for a better way to eliminate definitively on the greens diseases.

## **Conclusion**

- Minia Governorate is one of the central provinces of Egypt, which is characterized by a special climate, the climate of the most important is what distinguishes extremism in temperatures either to decline or rise, and this makes the province belong to the desert climate, although it is the end of a southern semi-desert climate.
- This climatic condition the public to maintain - no doubt - no effect varies in its intensity and its effects on agricultural crops in general and on the greens in particular, where the vegetables have many types, which gives a great opportunity to study the environmental boat by the impact, as reflected where - after citrus - raised climate change, to the detriment of production, so it affects the production of a full season.
- Vegetable production Minia province is exposed to waves of frost in the winter, as it is exposed to waves sweltering hot in the summer, in addition to the sirocco waves that do not harm the production of agricultural and vegetable production, but also harmful to human health, where it lasts for long periods during the spring, and each wave lasts for two or three days.
- The impact of climatic conditions is not limited to the occurrence of damage to crops in the fields, and the incidence of serious diseases of plants, but characterized this effect in the process of gathering the crop and ways to save it, has to be the availability of special climatic conditions, so as not to hurt the crop damage and harm the general economic situation.
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- Many solutions have been developed to try to overcome the climatic conditions surrounding the production of greens, a regulatory and agricultural, biological and chemical methods, and disadvantages of each method and own disadvantages.

- There are some attempts to overcome the climate anomalies which greenhouses, and lead the establishment of greenhouses in Upper Egypt in general and in Minia in particular to the many problems, due to higher-range thermal daily, and this was reflected on the greenhouses built, decreased the number to a large extent in most of Upper Egypt governorates .
- The intense heat rising in summer with high liquid ventilation, cooling and energy used where costs may lead to limiting the use of greenhouses in agriculture on the winter months. The different materials made from them greenhouses, as it must be the greenhouse material may allow humidity ranging between (50-85%) to achieve higher productivity.
- Without successful marketing, can not be achieved this kind of agriculture desired results, marketing expertise for most farmers limited, especially on vegetables trade, which is damaged, and poverty in the stages of production, harvesting, transportation and marketing.
- Still growing greenhouses in Minia limited to some areas, small sizes, and confined to a limited types, including tomatoes, peppers, cucumbers and mallow, and despite the fact that these crops generate a return in the amount of production for crops exposed especially vegetables, however, the high cost makes recourse to it in the form of a few attempts, both in vegetable production or flowers and ornamental plants.

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